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(54) **PRINTING APPARATUS AND PRINTING METHOD**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2002/0167569 A1* 11/2002 Hosono B41J 2/14274
347/70
2004/0183846 A1* 9/2004 Kunihiro B41J 11/008
347/14
2006/0192798 A1 8/2006 Kuki et al.
2013/0050315 A1* 2/2013 Kusakari B41J 2/155
347/9

FOREIGN PATENT DOCUMENTS

JP 2006-239866 A 9/2006

* cited by examiner

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(57) **ABSTRACT**

A printing apparatus is provided with a transport mechanism section that transports work, a printing mechanism section that has multiple nozzle groups, which perform printing by discharging an ink onto the work as liquid droplets, and control section that controls the actions of the transport mechanism section and the printing mechanism section. In addition, the printing mechanism section includes a first nozzle row that forms a first printing region, a second nozzle row that forms a second printing region, and an overlapping section in which the first nozzle row and the second nozzle row overlap. Further, the control section prohibits overlapping of the first printing region with the second printing region on the work when forming the third printing region.

9 Claims, 10 Drawing Sheets

